Central Statistics Office, Industrial Statistics Wing, Government of India, Kolkata

Environmental data in Annual Survey of Industries

Dr. Bivas Chaudhuri, CSO, India

Manufacturing in Indian Economy

- India has emerged as one of the fastest growing economies over last two decades.

- Manufacturing contributes around 15% of GDP and provides almost 12.6% of India's total employment.

- Manufacturing activities are not always environmental friendly and therefore, environmental data in manufacturing sector are important parameters.

Data sources and methods

India's manufacturing has been stratified into two mutually exclusive and collectively exhaustive strata for the purpose of collection of statistics in Ministry of Statistics & PI, Govt of India *viz*. (i) sector covered under **Annual Survey of Industries(ASI) and (ii) the rest covered under survey of unorganized manufacturing sector through National Sample Survey (NSS).**

ASI is a statutory survey under the Collection of Statistics Act 1953/2008. It is a record based survey.

Data are collected on various economic and physical parameters based on records for the reference period which include inter alia environmental data like **(i) Fixed assets data on pollution control equipments, (ii) Fossil fuels, electrical energy consumed in terms of quantity and value , (iii) ISO certification (14000 series) status, (iv) raw materials consumed as input and (iv) products, by-products including waste.**

Sources and method contd...

• From ASI 2010-2011, input and output materials including waste are in National Product Code for Manufacturing Sector(NPCMS) 2011, based on CPC, version 2.0. NPCMS, a 7 digit product code, is used from ASI 2010-2011.

• Industries, including recycling industries, are classified in National Industrial Classification(NIC) 2008, based on ISIC, version 4.0

NPCMS

Sources and method contd…

- ASI covers all factories registered under sec 2(m) of the Factories Act 1948 and Bidi & Cigar Workers (conditions of employment) Act, 1966.

- A statistical sampling design is adopted for the survey by stratifying the domain in Census and Sample sectors. From sample sector, around 20% sample is taken through circular systematic sampling upto ASI 2011-2012.

- For non-ASI manufacturing sector, NSS covers every five year using area frame in rural area and list frame urban area(from 2005-2006) using various stratified multistage sampling. The last survey was in the year 2010-2011.

ASI data- collection and quality

- There are multi-level trainings at all India and local level
- There are multi-tier scrutiny and field inspection of survey schedules
- There is a web-portal for on-line submission of return
- There are separate offices for data collection and data processing.
- Meetings with industrial associations to facilitate collection
- Publicity
- Regular seminars on industrial statistics to promote research work on industrial data including environmental aspects.
- Published data are available in website www.mospi.nic.in
- Unit level data are available on cost.

Future plan of actions: A study under an expert group is continuing for inclusion of more environmental related data in ASI schedule *viz*. on water and non-conventional energy

Recommendations for inclusion in INPUT block:

- Quantity consumed and purchase value of Petrol, Diesel, Other oil, lubricants consumed separately

- Value of non-conventional energy own generated and purchased

- **Quantity of**
    1. Water purchased & consumed
    2. Water harvested & consumed
    3. Water own extracted from surface
    4. Water own extracted from ground

Recommendations for inclusion of a separate WATER block:

Quantity of :

a. Waste water generated
b. Waste water treated
c. Treated water released
d. Treated water recycled
e. Others (if any)
f. Metered or not (yes-1, no-2)

END –Part-I

Thanks

bivaschaudhuri@gmail.com

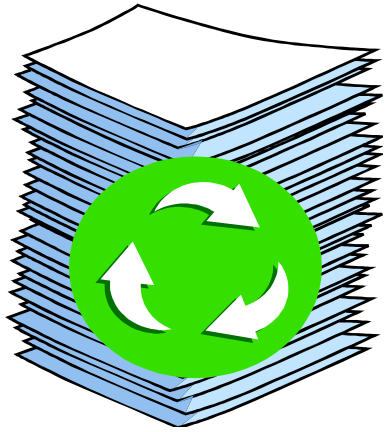
Part-II
Statistical analysis based on environmental data

Share of factories reporting pollution control equipments in last seven years in ASI sector

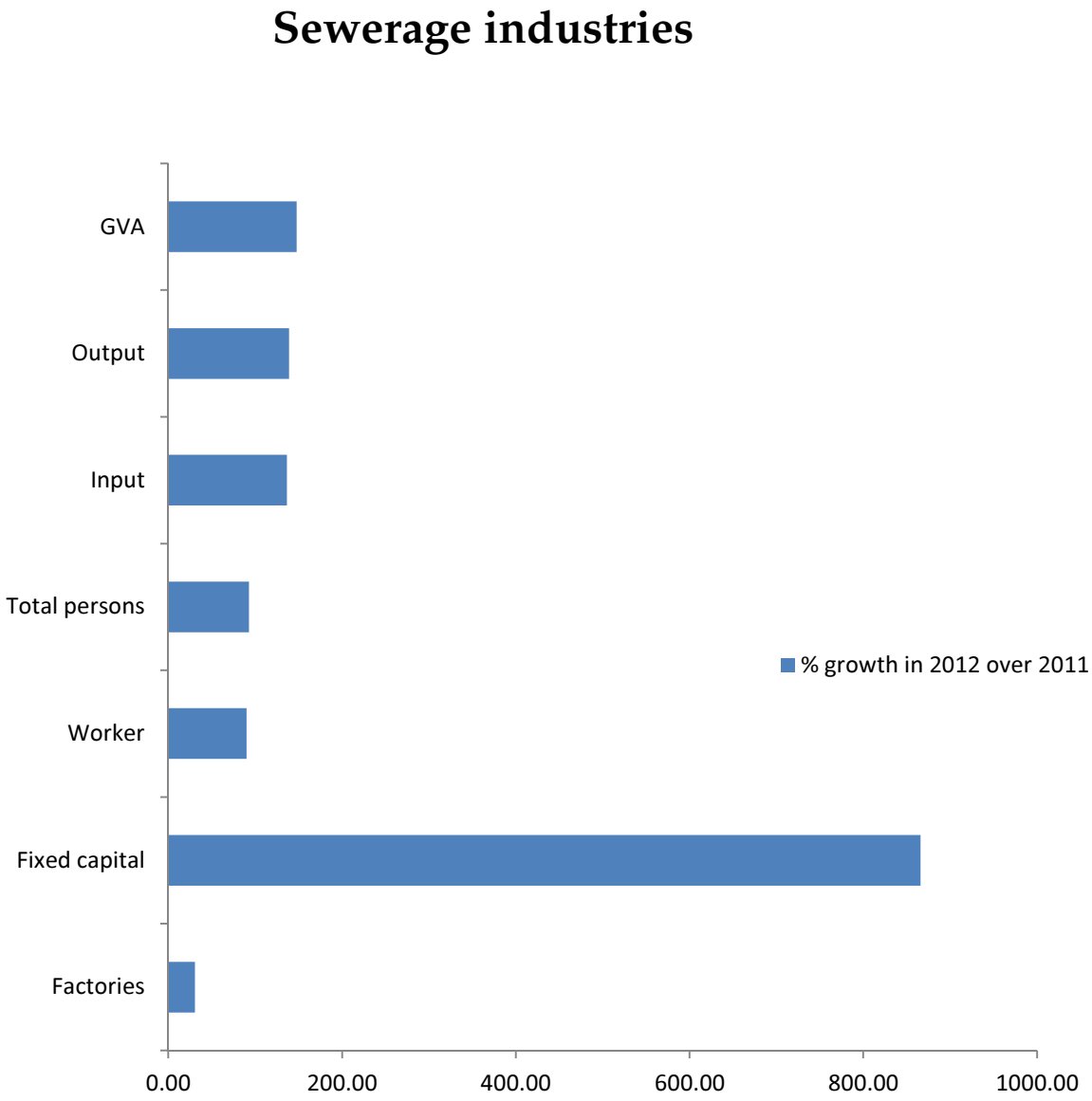
ASI Years	Total Surveyed factories	Factories in operation	Number of factories reported pollution control equipments	Percentage Share (%) over factories in operation
1	2	3	4	5
2011-12	61872	49634	2983	6.01
2010-11	56467	48620	3002	6.17
2009-10	61114	56112	3268	5.82
2008-09	58391	51230	3268	6.38
2007-08	60856	53486	3252	6.08
2006-07	70725	58311	3458	5.93
2005-06	60980	57857	3420	5.91

The share of Pollution control equipment is 0.49% of the total fixed capital as per ASI 2010-2011

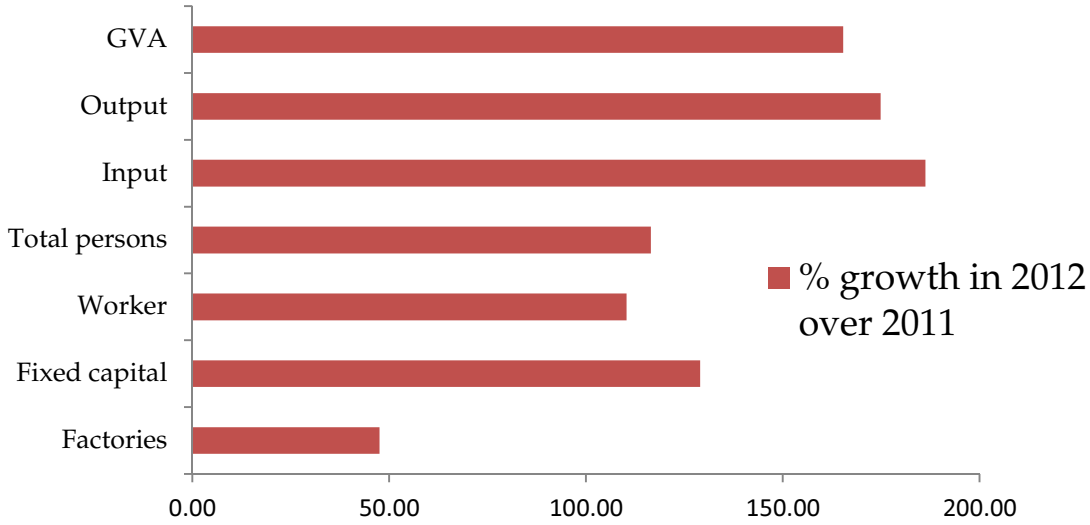
Recycling industries



There is an overall growth with huge growth in investment in fixed capital



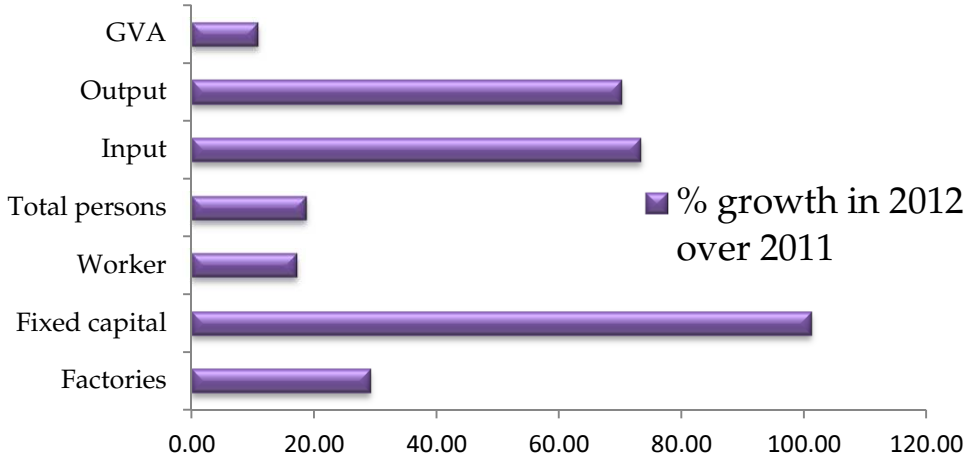
Waste treatment & disposal industries



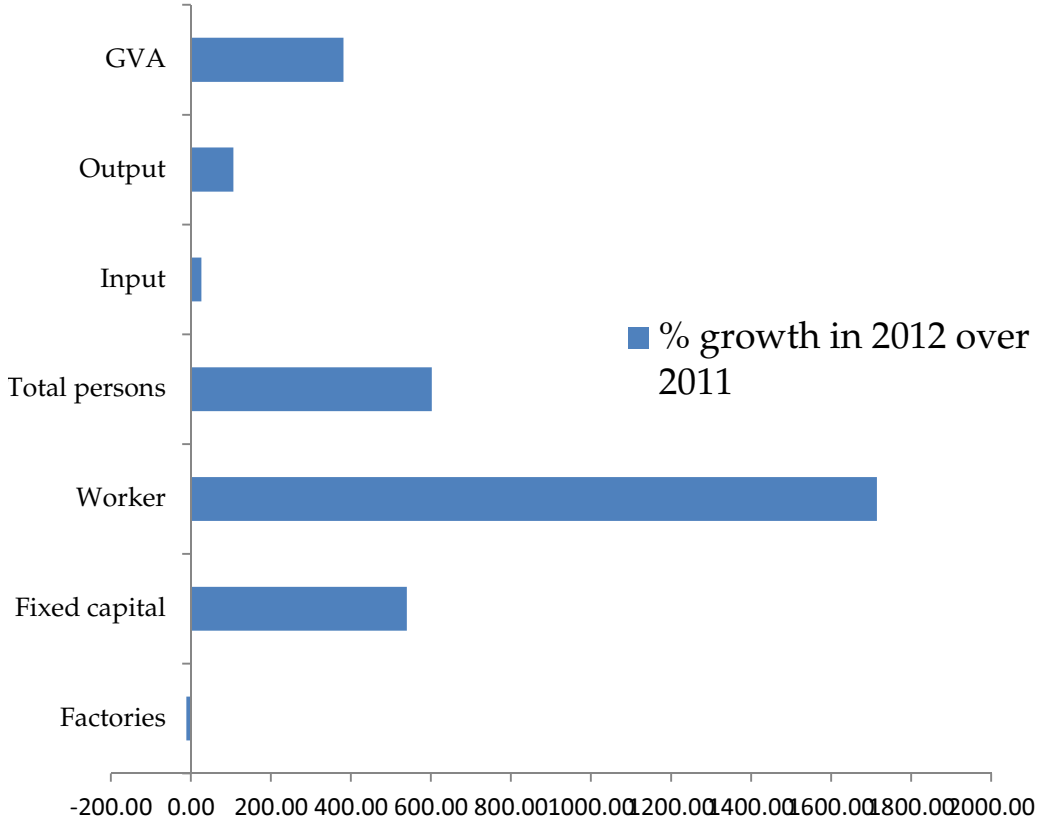
Huge growth is noticed in this industry

Materials recovery industries

Huge growth is noticed in this industry



Remediation activities and other waste management services



Though slight fall is noticed in size, growth is noticed in employment, investment and GVA.

Waste produced and consumed

What is waste balance ?

- Waste products defined by Central Product Classification ver 2.0 as generated from various industries do have economic value. Such products are also used as input raw material in other industries. In some cases, it is found that the demand is very high in the organized sector whereas there are many waste products which have no taker.

- Organised manufacturing sector is the biggest producer and consumer of waste products , a flow matrix shows various waste product as output being consumed as input in other industries in quantity terms.

- The balance so obtained is the waste disposal capacity .

Methodology

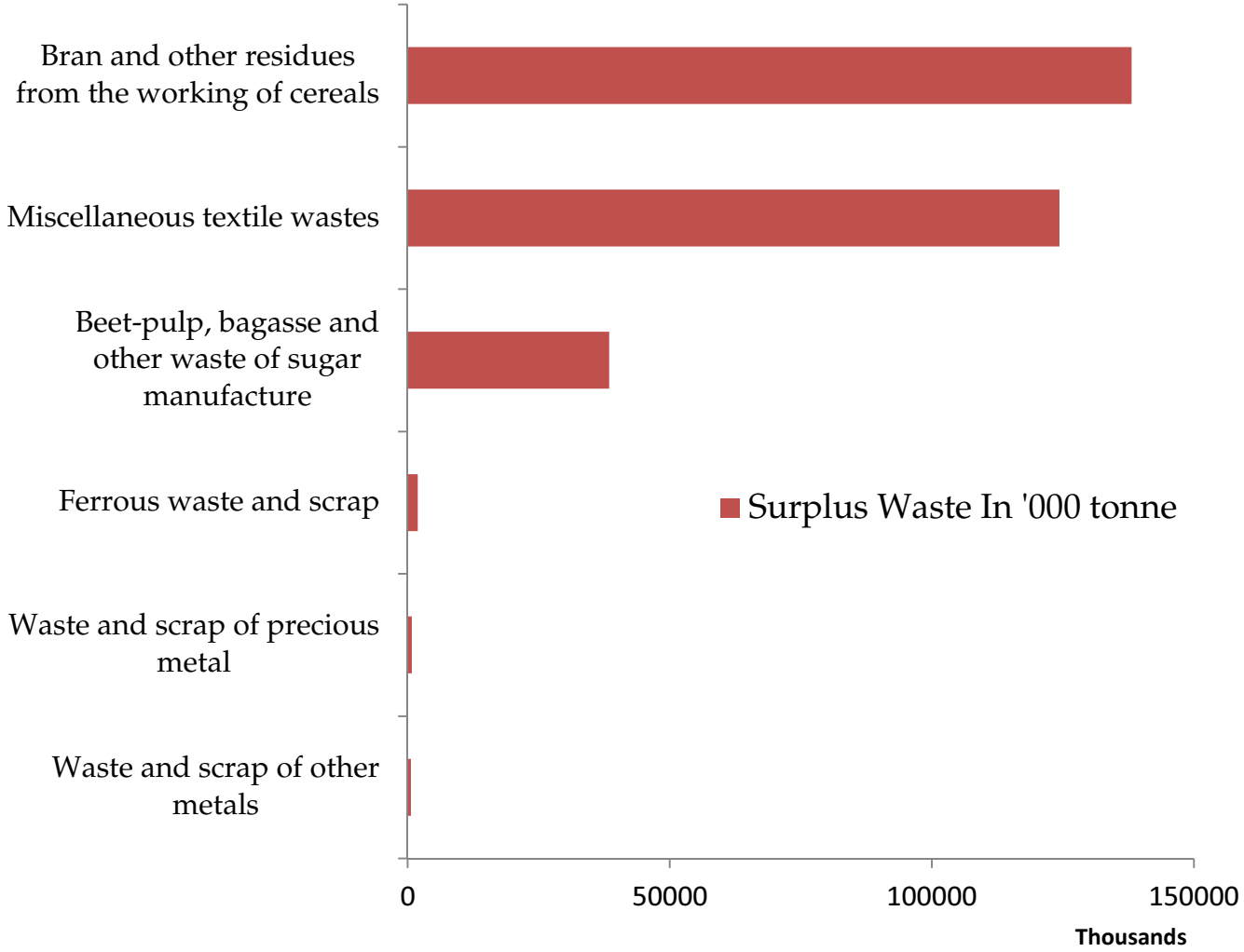
• Raw materials classified under Class 39 of NPCMS which are consumed as input by each industry division (NIC 2 digit) reveal the quantity of waste product being used in the organized manufacturing sector as input.

• Similarly, Raw materials classified under Class 39 of NPCMS which are produced as output by the entire organized manufacturing sector digit) reveal the product-wise quantity of waste product produced in the organized manufacturing sector as output.

• Under the assumption that such output being consumed within the organized the manufacturing sector as input raw material , two flow matrices has been prepared for ASI 2010-2011 and ASI 2011-2012.

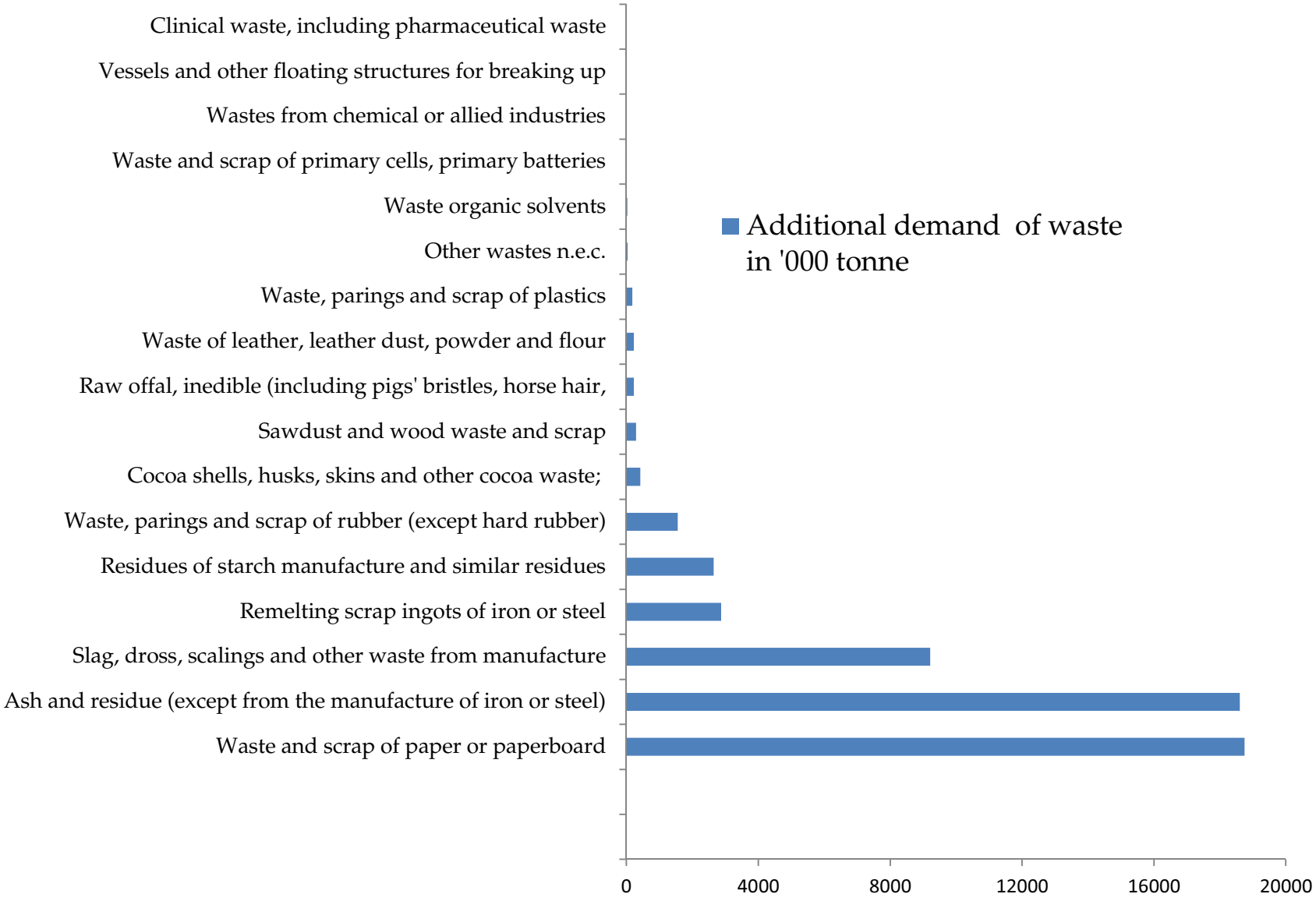
• In case total output is greater than total cumulative input, it is termed as excess supply in the economy from the organized sector otherwise it is termed as additional demand.

Figure : Surplus waste in organized manufacturing sector
ASI: 2011-2012



The total production in ASI sector is not used fully in the same sector leading to the possibilities of use in unorganized sector, trade and dumping in nature.

Figure : Additional demand of waste in organized manufacturing sector ASI 2011-2012

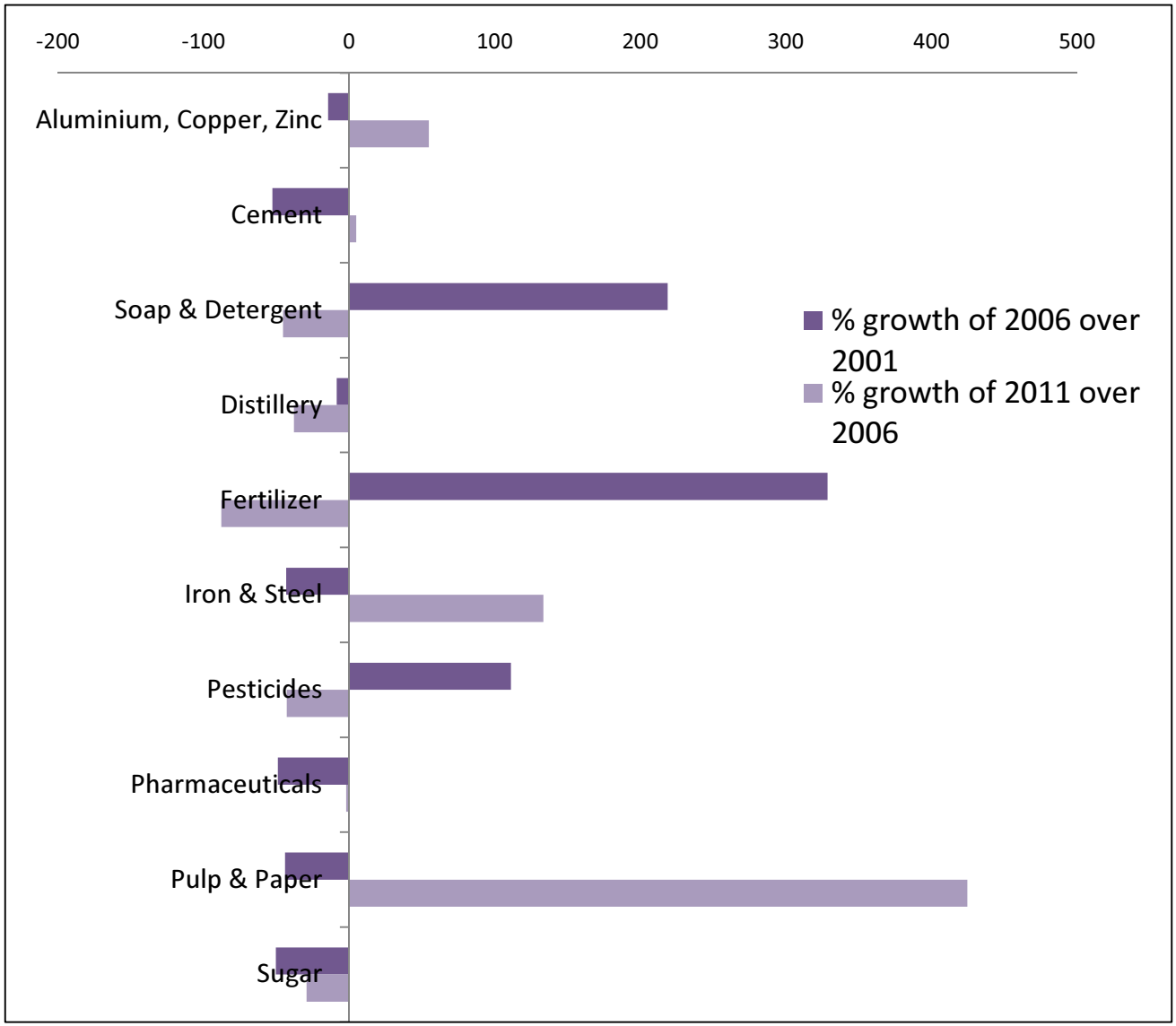


Polluting industries

Size structure of large and small polluting industries by type of activity in India (number)

Manufacturing of	2000-2001			2005-2006			2010-2011		
	Large	**Small**	**Total**	**Large**	**Small**	**Total**	**Large**	**Small**	**Total**
Aluminium, Copper, Zinc	2627	23418	26045	1719	20056	21775	2125	31082	33207
Cement	1510	11633	13143	1185	5526	6711	2697	5805	8502
Soap & Detergent	3794	84220	88014	4632	268638	273270	3499	146902	150401
Distillery	979	140284	141263	339	128639	128978	353	80162	80515
Fertilizer	626	694	1320	636	2975	3611	741	365	1106
Iron & Steel	3820	10181	14001	4374	5786	10160	6146	13516	19662
Pesticides	433	320	753	531	676	1207	533	387	920
Pharmaceuticals	7444	8756	16200	4042	4480	8522	4894	4398	9292
Pulp & Paper	1250	4466	5716	1064	2506	3570	3380	13153	16533
Sugar	17837	100637	118474	37915	50043	87958	15727	35471	51198
Total	**40320**	**384609**	**424929**	**56437**	**489325**	**545762**	**40095**	**331241**	**371336**

Growth of polluting industries in small sector (in %)

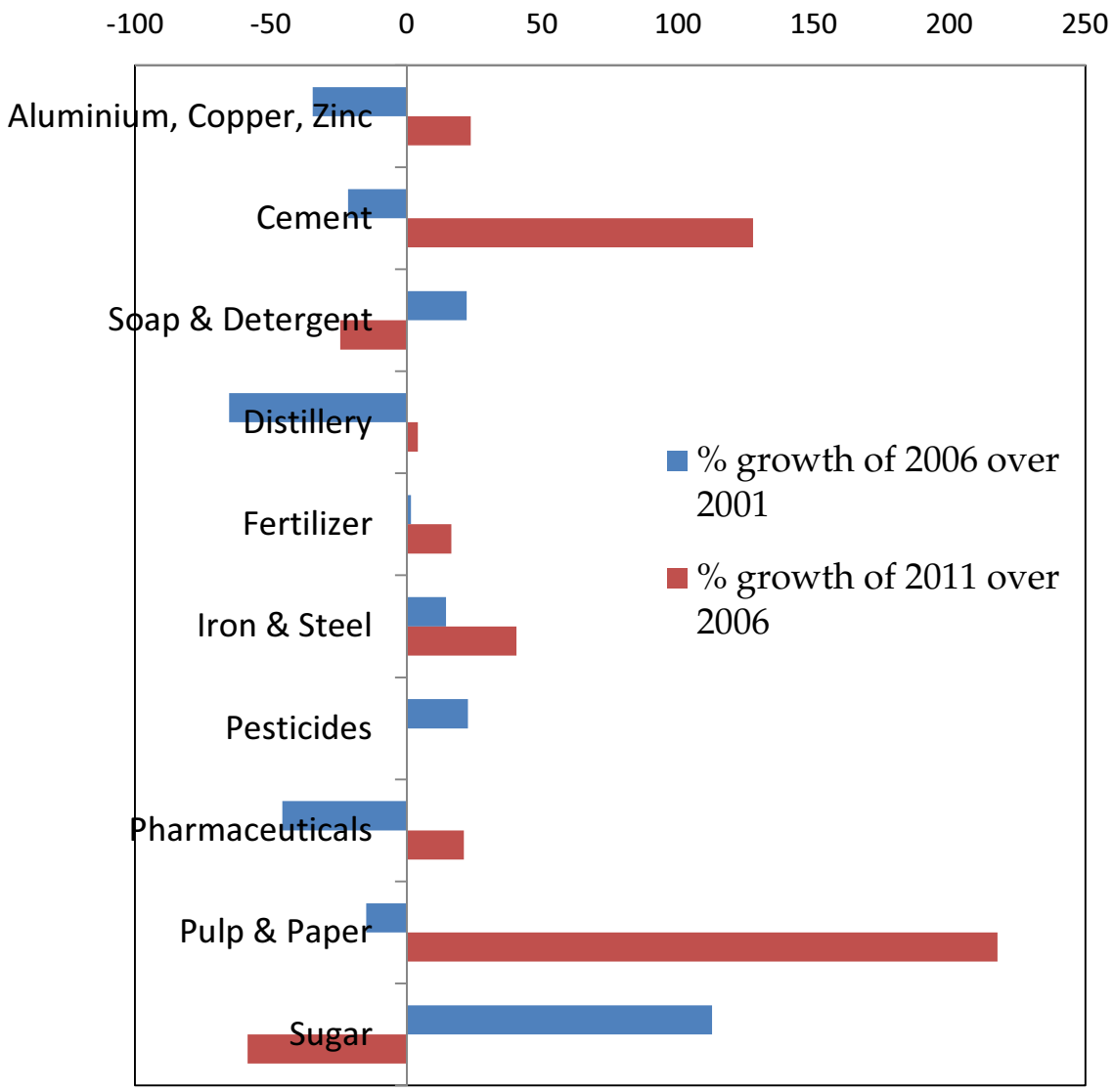


Industries considered for statistical analysis are:

Aluminium, Copper, Zinc
Cement
Soap & Detergent
Distillery
Fertilizer
Iron & Steel
Pesticides
Pharmaceuticals
Pulp & Paper
Sugar

It is notable that the size and growth in polluting small industries has reduced drastically in the year 2010-2011 compared to its growth in 2005-2006 over 2000-2001

Growth of polluting industries in large sector (in %)



Due to strict pollution control norms, large industries in this sector mandatorily use measures to control pollution.

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